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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,698	07/22/2003	Moritz Bauer	02/044 SGL	7037
23416 7590 01/16/2007 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899			EXAMINER FERGUSON, LAWRENCE D	
			ART UNIT	PAPER NUMBER
			1774	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/16/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/624,698

Applicant(s)

BAUER ET AL.

Examiner

Lawrence D. Ferguson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-16 is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment mailed October 17, 2006.
Claims 1 and 12 were amended rendering claims 1-16 pending in this case.

Claim Rejections – 35 USC § 103(a)

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krenkel et al (US 6,668,985 B2).

Krenkel discloses a ceramic brake lining which is reinforced in carbon fibers (column 1, lines 10-15, 48-49) which contains a matrix of silicon carbide (SiC) and carbon (C) and reinforcement component formed from carbon fibers with a minimum length of 10mm and a volume content of carbon fibers of 30% to 70% (column 2, lines 45-60). The carbon fibers are arranged as stacked layers of woven fabrics which are arranged in such as way as they run parallel to the friction surface (column 3, lines 10-15). Concerning claims 4, 6 and 7, Krenkel further discloses carbon fibers are formed from bundles of at least 1000 individual filaments (column 5, lines 1-2) along with having a thermal conductivity of the composite material with at least 10 W/mK (column 3, lines

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39-41). Regarding claim 10, the brake lining has two fixing holes (3) that allow fixing screws to be used (column 6, lines 10-12 and Figures 1-3) in order to provide a means for the brake lining and a metallic support or lining plate to be joined to the brake lining. Krenkel discloses the brake part (brake lining) and metallic support plate (plate lining) to be glued (adhesively bonded) (column 1, line 66 through column 2, line 1).

Although Krenkel does not specifically disclose the exact mass fraction of silicon carbide or silicon, mass fraction is an optimizable feature. In the absence of any evidence to the contrary, it would have been obvious to one of ordinary skill in the art to optimize the silicon and silicon carbide materials of the brake lining, because discovering the optimum or workable range involves only routine skill in the art. The mass fraction directly affects the mechanical strength of the brake lining. *In re Aller* 105 USPQ 233 and see *In re Boesch*, 617 USPQ 215. In the absence of evidence of criticality for the mass fraction of the silicon or silicon carbide material by Applicant, it is obvious to optimize the material. Additionally, there is also no clear teaching away from the claimed mass fraction of the ceramic brake lining material by Krenkel, as the reference does not exclude any percentages for the mass fraction.

4. Claims 12-16 are allowed. The prior art of record does not teach or suggest the recited process for producing a brake lining further including an infiltration of the densified C/C shaped body with a silicon melt, where the process for producing a brake lining has the mass fraction of silicon carbide is from 10% to 25%, and wherein the uppermost layer exposed to friction has a volume fraction of at least 50% of carbon

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fibers, and wherein the silicon content in the friction layer is lower than the silicon carbide content in the layer. The prior art does not teach motivation or suggestion for modification to make the invention as instantly claimed.

Response to Arguments

5. Applicant's arguments regarding the rejection made under 35 U.S.C. 103(a) as being unpatentable over Krenkel et al (US 6,668,985 B2) has been considered but is unpersuasive. Applicant argues

Rejection made under 35 U.S.C. 103(a) as being unpatentable over Krenkel et al (US 6,668,985 B2) in view of Dietrich et al (U.S. 626,1981) is withdrawn due to the Krenkel reference teaching the brake lining having screws.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Ferguson whose telephone number is 571-272-1522. The examiner can normally be reached on Monday through Friday 9:00 AM – 5:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye, can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



L. Ferguson
Patent Examiner
AU 1774



RENA DYE
SUPERVISORY PATENT EXAMINER
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